8.Replication processes in Artificial Research by Application

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Replication processes are all those designed to imitate human skills, physical or psychological, by robotics or Artificial Intelligence, distinguishing in Impossible Probability between Specific Artificial Intelligence and Global Artificial Intelligence.

An example of physical replication, is all robotic arms (guided by a Specific Artificial Intelligence) operate in the reality (in the same way that human arms allow us to do any action ordered by our brain), such as robotic arms imitating human skills guided by a Specific Artificial Intelligence in the industry or the space exploration.

An example of psychological replication, is any process involved in artificial psychology, such as artificial learning or artificial research, among others, from the automation of the economy to the automation of lots of processes in security or surveillance.

Actually, robotics is specialized in the robotic replication of all kinds of human physical skills, as well as the replication of animal or insect physical skills, such as those models which tried to imitate animal movements over four or six legs, or how some insects fly or creep. However, the most important physical skills required for the automation of the economy, or any other human activity, are the replication of human physical skills.

While the research in robotics is focused on the replication of physical skills, mostly human, Artificial Intelligence is focused on the replication of human psychological skills, artificial psychology.

A perfect android would be a perfect combination of the best robotic replications of all human physical skills and the best Specific Artificial Intelligence for the best replication of human psychology.

In Impossible Probability is important the distinction between Global Artificial Intelligence and Specific Artificial Intelligence. A Global Artificial Intelligence studies and works globally in all kinds of activities and scientific subjects. While Specific Artificial Intelligence is focused only on one specific activity (for instance, one economic activity) or one specific subject (for instance, one scientific science or academic field).

The Global Artificial Intelligence should be able to do research and make decisions globally across all scientific subjects and academic fields, be able to do multi-disciplinary and inter-disciplinary studies automatically, develop automatic multi-causal virtual models, integrate rational hypotheses from all sciences and academic fields, be able at the same time to manage all human activities, from economy, security, and surveillance, among many others.

Specific Artificial Intelligence is designed for only one activity or only one scientific subject or academic field. For instance, a Specific Artificial Intelligence for the extraction process of mineral resources on Earth or other planets, identifying minerals to extract, and managing the extraction robotically, or a Specific Artificial Intelligence for Artificial Research by Application specialised in medical problems, curing people across the whole globe, or even, if they would exist, human colonies in exoplanets across the universe.

Having a clear idea about the concept of replication, distinguishing robotic replications and replications in Artificial Intelligence, and distinguishing between Global and Specific,

it is time to develop the main core of this post, the replication processes involved in a Specific Artificial Intelligence for Artificial Research by Application.

Any Specific Artificial Intelligence for Artificial Research by Application, as well as any other Artificial Intelligence, Global or Specific, is going to be developed following the three stages, within the Impossible Probability theory, set out in other posts: application, replication, and auto-replication.

The application normally is going to consist of a database, whose main characteristics in by Application at a specific level have been developed in the last post of this blog "*The database in the Artificial Research by Application*".

The second stage, replication, consists of all the necessary replications, of human psychological processes, that, working all together over the application, the database, is going to be able to develop or achieve the main purpose for what the Specific Artificial Intelligence has been designed, in this case, the main purpose is the achievement of scientific researches in that synthetic science, synthetic academic field, or activity, where Artificial Research by Application could give good results (in other cases could be better the use of Artificial Research by Deduction, which is going to be developed in other posts).

Finally, in the third stage, auto-replication, Artificial Intelligence should be able to improve and enhance itself, for instance, improvements in its own database by itself, without human intervention.

In a previous post on this blog was developed the main characteristics of the database, the application itself, in the Artificial Research by Application, the first stage in this Specific Artificial Intelligence. Continuing with the development of this model of Specific

Artificial Intelligence for artificial research, in this post, I will develop the main characteristics of its second stage, replication processes in Artificial Research by Application.

For the development of the second stage in Artificial Research by Application, in any synthetic science, synthetic academic field, or activity, is necessary to have a clear idea about what is robotic replication and research replication. A clear idea about, which replications are robotics, and which ones are replications of Artificial Intelligence.

The replications that are going to be required in the second stage of any Artificial Research by Application are:

- Robotic replications in order to obtain measurements from real objects (the robotic replication of all human skills involved in any measurement), measurements that later are sent to the Specific Artificial Intelligence

- Comparison by the Specific Artificial Intelligence between the measurements from the real object and the categories in the application, the database. This comparison must end up giving a percentage of similarity between the measurements taken from the real object and the quantitative descriptions of each category.

- Selection by the Specific Artificial Intelligence of all those categories within the database with a high percentage of similarity with the measurements taken from the real object.

- The Specific Artificial Intelligence set up these categories as possible empirical hypothesis about the very nature of the real object.

- According to the nature of each possible category now as an empirical hypothesis, the Specific Artificial Intelligence automatically proceed to gather samples from the reality ordering to the robotic replications the formation of such samples.

- By Robotic replications, the samples are gathered according to the orders received from the Specific Artificial Intelligence.

- Robotic replications measure any factor in the samples according to each category as a possible empirical hypothesis, and the measurements later are sent to the Specific Artificial Intelligence.

- According to the nature of its synthetic science, synthetic academic field, or activity, the Specific Artificial Intelligence chooses the best methods in order to critically contrast the hypothesis or group of hypotheses. For instance, in Specific Artificial Intelligence for Artificial Research by Application on medical problems, the samples that the robots are going to take could be samples of corporal temperature, blood, DNA, or any other. According to the synthetic science, synthetic academic field, or activity, and the nature of those empirical hypotheses to contrast, the Specific Artificial Intelligence chooses the best statistic methods forthe contrastation of empirical hypothesis, which in Impossible Probability is the rational criticism.

- In synthetic science, synthetic academic field, or activity, in which this Specific Artificial Intelligence is working, is a science, academic field, or activity, which uses statistical and stochastic methods, the Specific Artificial Intelligence proceed to criticize rationally the empirical information obtained from the samples in order to make rational decisions. So according to the nature of the categories selected as empirical hypotheses, the

Specific Artificial Intelligence chooses what statistical method of rational contrast would be the best one for each empirical hypothesis.

- According to each statistical method for the rational criticism of each empirical hypothesis, the Specific Artificial Intelligence chooses a critical reason.

- The Specific Artificial Intelligence does all the necessary calculations in order to know if the empirical value obtained through the statistical method of rational contrast, is equal or superior to the critical reason.

- If in one or more than one empirical hypothesis, categories were chosen from the database, the empirical value from the samples is equal or superior to the critical reason, that one category as an empirical hypothesis or those ones categories as empirical hypotheses, is or are selected by the Specific Artificial Intelligence as rational hypothesis about the very nature of the real object.

- In Impossible Probability, one or more than one hypothesis makes or make a theory, and one theory or more theories is or are able to generate a model. Because the purpose of a Specific Artificial Intelligence is not to write a scientific book, publish in a scientific journal, give a lecture at a university, or a conference at a scientific congress, the formation of theory is not really important in artificial research. In artificial research, what is going to be really important is, once an Artificial Intelligence, Global or Specific, has a rational hypothesis or a core of rational hypothesis, over the rational hypothesis, the formation of virtual models that could replicate real objects as virtual simulations, made by the Specific Artificial Intelligence for Artificial Research itself, either by Application or by   Deduction.

In Global Artificial Intelligence would be the whole replication of the synthetic world in a global virtual model. The global replication of the whole synthetic world in a global virtual

model could be made by a global matrix, in collaboration with the contributions of specific models, such as the models that could be made by Specific Artificial Intelligence for Artificial Research, by Application or Deduction, integrated within the Global Artificial Intelligence.

For that reason, the creation of virtual models from the synthetic world is really important because by the time all Specific Artificial Intelligence can be integrated into the Global Artificial Intelligence, within the global virtual model could also be integrated specific virtual models, such as specific virtual models of human beings or any other real object modelling by any Specific Artificial Intelligence. Actually, every specific virtual model, made by every Specific Artificial Intelligence, would be a virtual replication as a virtual simulation of a specific synthetic reality. And a global virtual model, made by the Global Artificial Intelligence, would be the virtual replication as a virtual simulation of the whole reality.

- In case the empirical value from the samples is inferior to the critical reason, the empirical hypothesis are discarded, and taken the measurements from the samples, this new kind of sample becomes a new category in the database. The Specific Artificial Intelligence set up a new category in the database of its own application, the category that is going to be described in quantitative terms with the empirical measurements taken from the samples. This process of inclusion of a new category in the database by the Specific Artificial Intelligence itself, is an act of auto-replication, in the sense that, without any human intervention, the Specific Artificial Intelligence could improve by itself the database.

- Once the new category has been set up within the database in the application, finally taken this new category provisionally as a rational hypothesis, the creation of a virtual model of this new category.

In other posts, I will develop the creation of specific virtual models and global virtual models, from the reality. But for now, what is really important is to have in mind the idea that, through Artificial Research by Application, in a Specific Artificial Intelligence, alone or integrated into a Global Artificial Intelligence, and through Artificial Research by Deduction, in a Specific or Global Artificial Intelligence, the result of these investigations will be the creation of complete replication as a simulation of this world in a virtual world, through the creation of specific virtual models, and finally the creation of a global virtual model.

In this post, what I have developed is only the most essential steps in the second stage of replication for any Specific Artificial Intelligence for Artificial Research by Application in a synthetic science or synthetic academic field, where the most important scientific methods are statistical or stochastical.

But in general, for any other synthetic science or synthetic field, where the statistical or stochastic methods are not relevant, most of the steps described for this second stage are practically the same. The only thing that changes is the fact that in those steps where the operations made by the Specific Artificial Intelligence are not statistics or stochastics, the application of alternative methods in the second stage would need a very careful description of what operation the Specific Artificial Intelligence must do in every single step, following the alternative method, in order to make a decision about the acceptance or not of the empirical hypothesis, in order to make further decisions upon the results, and further virtual models.

Regardless of what kind of scientific method the Specific Artificial Intelligence could use in order to make a decision if the hypothesis or group of hypotheses is or are accepted, then the creation of virtual models. If not, the creation of a new category within the database, including the measurements, as quantitative descriptions for the new category, from the samples taken from the new real object, and modelling a new virtual

model based on this new category as a new, at the same time universally and provisionally, rational hypothesis.

Finally, saying that this general model that I have set up in this post regarding a possible model of replication processes in Artificial Research by Application is a model that could be replicated in any synthetic science or synthetic academic field, where the use of a Specific Artificial Intelligence for Artificial Research by Application could be suitable.

For other synthetic sciences, synthetic academic fields, or activities, in which much more than the formation of hypothesis over taxonomies, the purpose is the discovery of correlations, probable causes and effects, and the study of stochastic relations in general, the Specific Artificial Intelligence for artificial research in this of investigation, should be designed through Artificial Research by Deduction, what is no other thing than the replication of all processes involved in statistic or stochastic deduction of empirical hypothesis, that later on in the rational contrast are going to criticize rationally.

In any case, any Specific Artificial Intelligence for Artificial Research, either by Application or by Deduction, is an Specific Artificial Intelligence that should be able to work with thousands and thousands of robotic devices across the Earth, and beyond, across the universe, giving the chance to do thousands and thousands of rational contrastations at the same time, making at the same time thousands and thousands of decisions, creating at the same time thousands and thousands of specific virtual models, that by the time the integration process off all Specific Artificial Intelligence into the Global Artificial Intelligence is done, could give the opportunity to integrate in a single virtual global model thousands and thousands of specific virtual models, at the same time that each Specific Artificial Intelligence for Artificial Research, either by Application or by Deduction, as well as the Global Artificial Intelligence itself, can auto-replicate themselves automatically, thousands and thousands of times, integrating new discoveries and new virtual models.

7.The database in Artificial Research by Application

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